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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,952	01/13/2004	Ofir Zohar	ASSIA 20.866	3307
26304 7590 06/05/2007 KATTEN MUCHIN ROSENMAN LLP 575 MADISON AVENUE NEW YORK, NY 10022-2585			EXAMINER VERDI, KIMBLEANN C	
			ART UNIT 2109	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/756,952

Applicant(s)

ZOHAR ET AL.

Examiner

Kacy Verdi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date March 10, 2004.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

WILLIAM THOMSON
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

DETAILED ACTION

This office action is in response to the Application filed on January 13, 2004. Claims 1-32 are pending in the current application.

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: it does not state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56. The declaration recitation of "...duty to disclose information which is material to the examination..." should be "...duty to disclose information which is material to patentability...".

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6 and 17-22 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent 6,343,324 B1 to Hubis et al. (hereinafter Hubis).
4. As to claims 1 and 17, Hubis teaches a method for conveying a Small Computer System Interface (SCSI) command from a host to a logical volume, the method comprising:

Incorporating (e.g. stored in command) an indication of an address of the logical volume (Logical Volume Number, bytes 3 and 4, Read LUN Map Vendor Unique Direct

Command, Table 1, col. 18, lines 36-52, specifies the device number of the logical Volume whose information is to be reported (e.g. read), col. 18, lines 60-61) in the SCSI command so as to generate a modified SCSI command (Direct Command is a SCSI Vendor Unique Command, col. 18, line 17);

Conveying (e.g. sending command) the modified SCSI command from the host (101-1, 101-2, 101-3, Fig. 1) to a target device (Array Controller 104, Fig. 1) (Vendor Unique Direct Commands are Host-to-Volume Mapping Direct Commands allows commands to be sent and received by array controller, col. 18, lines 18-19, e.g. a request made by a host for a logical volume, col. 18, lines 2-3, sent from Host 101-1 to Array Controller, 104, Fig. 1);

receiving the modified SCSI command at the target device (receipt of a host access request (e.g. read or write, or Vendor Unique command), col. 15, lines 11-13) and recovering the address from the modified SCSI command (once command received controller determines type of command, step 302, Fig. 3A, for a Read or Write command controller determines LUN and corresponding logical volume to which command is addressed, step 319, Fig. 3b, col. 15, lines 14-24); and

executing (e.g. process command) the SCSI command at the logical volume in response to the recovered address (access to logical volume permitted, process command normally, step 325, Fig. 3B).

As to claim 17, Hubis teaches a processor (180, Fig. 2A).

5. As to claims 2 and 18, Hubis teaches the method according to claim 1 and the apparatus according to claim 17, wherein the logical volume (logical volumes, 108, Fig.

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1) comprises at least one of a volume partition (Logical Volume 1-4, 108-1, 108-2, 108-3, 108-n, Fig. 1) and a logical unit (e.g. LUN) (array controller 104, Fig. 1, divides the storage into a number of logical volumes 108, Fig. 1, which are accessed through a Logical Unit Number (LUN) addressing scheme, which refers to a logical unit, col. 2, lines 39-45).

6. As to claims 3 and 19, Hubis teaches the method according to claim 1 and the apparatus according to claim 17, wherein the indication comprises the address of the logical volume (Logical Volume Number, bytes 3 and 4, Read LUN Map Vendor Unique Direct Command, Table 1, col. 18, lines 36-52, specifies the device number of the logical Volume whose information is to be reported (e.g. read), col. 18, lines 60-61) in the SCSI command so as to generate a modified SCSI command (Direct Command is a SCSI Vendor Unique Command, col. 18, line 17).

7. As to claims 4 and 20, Hubis teaches the method according to claim 1 and the apparatus according to claim 17, wherein the logical volume (Logical Volume 108, Fig. 1) is comprised in a plurality of logical volumes (Logical Volumes 1-4, 108-1, 108-2, 108-3, 108-n, Fig. 1), and wherein the target device (e.g. array controller) is comprised in the plurality (inventive structure and method is suited for situations where one or more data storage array controllers are attached to multiple host computers, col. 4, lines 64-66).

8. As to claims 5 and 21, Hubis teaches the method according to claim 1 and the apparatus according to claim 17, wherein receiving the modified SCSI command at the target device (receipt of a host access request (e.g. read or write, or Vendor Unique

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command), col. 15, lines 11-13) comprises converting the modified SCSI command to the SCSI command (once command received controller determines type of command, step 302, Fig. 3A, for a Read or Write command controller determines LUN and corresponding logical volume to which command is addressed, step 319, Fig. 3b, col. 15, lines 14-24) and conveying the SCSI command to the logical volume in response to the recovered address (access to logical volume permitted, process command normally, step 325, Fig. 3B).

9. As to claims 6 and 22, Hubis teaches the method according to claim 1 and the apparatus according to claim 17, wherein the SCSI command comprises a logical block address (LBA) in the logical volume (Logical Volume Number (LUN), bytes 3 and 4, Read LUN Map Vendor Unique Direct Command, Table 1, col. 18, lines 36-52, specifies the device number of the logical Volume whose information is to be reported (e.g. read), col. 18, lines 60-61, LUN is addressing scheme which is common in SCSI protocol based storage systems, col. 2, lines 40-43)

10. Claims 7-15 and 23- 31 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent 4,975,829 to Clarey et al. (hereinafter Clarey)

11. As to claims 7 and 23, Clarey teaches a method for accessing data and an apparatus for accessing data, comprising:

generating (e.g. providing set of functions, col. 7, lines 5-6) in a host an interface object (SCSI Driver Interface 24, Fig. 1, is a standard communication interface provided by the Host Adapter driver program 23, Fig. 1, col. 6, lines 63-64 and col. 7, lines 3-4);

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generating (e.g. called by called by Kernel, 21, col. 6, line 42-43) in the host a first plurality of device objects (Target Drivers 22, Fig. 1, are control programs called by Kernel, 21, col. 6, line 42-43).

adapted to convey a data command (e.g. Target Controller command block) from the host to a second plurality of logical volumes (e.g. Targets 13, Fig. 1, target comprises one or more devices of the same type, for example a plurality of discs, col. 5, lines 60-62) (Target Drivers 22, Fig. 1 are control programs each one of which controls a different class of devices (e.g. Targets 13, Fig. 1) communicate with the devices that it controls in a device-specific manner, col. 6, lines 43-47, Target Drivers 22, Fig. 1 communicate with Targets 13, Fig. 1 indirectly, through Host Adapter Driver 23, Fig. 1 and Host Adapter 10, Fig. 1);

writing (e.g. fill SCB with information, step 204, Fig. 2) in the interface object from an application one or more indications of addresses of the logical volumes (SCB data structure contains SC_DEV field 1108, Fig. 11, is address of device which comprises a device number and a logical unit number, passed to the Target Driver by the Kernel, col. 10, lines 25-28), the one or more indications comprising a target-indication of an address of a targeted logical volume (the logical unit number identifies a particular device (e.g. targeted logical volume) under a target controller, col. 10, lines 30-31, and Target Driver 22, Fig. 1 executes Call SDI_Xlate step 205, Fig. 2 Host Adapter performs address translation step 501, Fig. 5 and stores information in SCB step 502, Fig. 5);

designating one of the device objects (Target driver 22 receives call from kernel 21, Fig. 1, step 200, Fig. 2) to convey the data command (e.g. send command) to the

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targeted logical volume in response to the target-indication in the interface object (Call SDI_Xlate step 205, Fig. 2, Host Adapter performs address translation step 501, Fig. 5 and stores information in SCB step 502, Fig. 5, Target Driver sends job step 207, call SDI_SEND function step 208, part of interface 24, which sends the Target Controller command block on to the Target Controller, and command executed by logical unit, col. 13, lines 22-30); and

accessing (e.g. executing the command block) the data in the targeted logical volume in response to the data command (commands sent to logical unit via SDI_SEND function (e.g. Target Controller command block) are executed by the logical unit, col. 13, lines 26-30).

As to claim 23, Clarey teaches a targeted logical volume (e.g. logical unit) which is adapted to access the data in response to a data command (the target controller command block includes an op code that specifies to target controller 17 the function to be performed, a logical unit number identifying the one of devices 18 controlled by target controller 17 on which the function is to be performed, addressing information identifying the data block on which the function is to be performed, the size of that data block, col. 12, lines 33-42, commands sent to logical unit via SDI_SEND function are executed by the logical unit, col. 13, lines 26-30).

12. As to claims 8 and 24, Clarey teaches the method according to claim 7 and The apparatus according to claim 23, wherein designating the one of the device objects comprises:

opening a connection (e.g. Host Adapter Driver called) between the one of the device objects (Target Drivers 22, Fig. 1) and the targeted logical volume (e.g. Targets 13, Fig. 1, Target Drivers 22, Fig. 1 communicate with Targets 13, Fig. 1 indirectly, through Host Adapter Driver 23, Fig. 1 and Host Adapter 10, Fig. 1); and

conveying the data command via the connection (Target Driver sends job step 207, call SDI_SEND function step 208, part of interface 24, which sends the Target Controller command block on to the Target Controller, and command executed by logical unit, col. 13, lines 22-30).

13. As to claims 9 and 25, Clarey teaches the method according to claim 8 and the apparatus according to claim 24, comprising writing an indication of the connection in the interface object (SC_COMP_CODE field 1102, Fig. 11 of SCB is a completion code that indicates the current status of the job (e.g. connection), col. 8, lines 11-12).

14. As to claims 10 and 26, Clarey teaches the method according to claim 7 and the apparatus according to claim 23, wherein the interface object comprises at least one of a file (e.g. data structure) and a pseudo-file (e.g. set of functions) (Interface 24, Fig. 1 is a communication protocol that comprises a set of functions which are provided by host adapter driver 23, Fig. 1, for target drivers 22 Fig. 1, data structures which are shared between drivers 22 and 23, Fig. 1, and interrupt functions which are provided by target drivers 22, Fig 1 for host adapter driver 23, Fig. 1, col. 7, lines 4-10).

15. As to claims 11 and 27, Clarey teaches the method according to claim 7 and the apparatus according to claim 23, wherein accessing the data comprises one of reading the data from the targeted logical volume (e.g. read I/O request) and writing the data to

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the targeted logical volume (e.g. write I/O request) (Target driver 22, Fig. 1 receives a call from kernel 21, at step 200, requesting it to perform a peripheral device job a request to read or write a data file on a storage device such as a disk or a tape (e.g. Target 13, Fig. 1), col. 11, lines 41-46).

16. As to claims 12 and 28, Clarey teaches the method according to claim 7 and the apparatus according to claim 23, comprising:

performing an execution of the data command at the targeted volume (commands sent to logical unit via SDI_SEND function (e.g. Target Controller command block) are executed by the logical unit (e.g. target), col. 13, lines 26-30); and

removing (e.g. deallocate) the target-indication (e.g. SCB) from the interface object in response to the execution (If no errors are found at step 302, Fig. 3, means job was executed successfully, and Target Driver 22, Fig. 1 completes the job step 314, Fig. 3. Target Driver 22, Fig. 1 then calls the SDI_FREEBLK function (Figure 10), at step 315, Fig. 3, to deallocate the SCB of the completed job, col. 15, lines 19-21 and 25-27).

17. As to claims 13 and 29, Clarey teaches the method according to claim 7 and the apparatus according to claim 23, wherein writing in the interface object comprises the application (e.g. Target Driver 22, Fig. 1) polling (e.g. calling SDI_XLATE function) the interface object to perform the writing (Target Driver 22, Fig. 1 executes Call SDI_Xlate step 205, Fig. 2 Host Adapter performs address translation step 501, Fig. 5 and stores information in SCB step 502, Fig. 5).

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18. As to claims 14 and 30, Clarey teaches the method according to claim 13 and the apparatus according to claim 29, wherein the application (e.g. Target Driver 22, Fig. 1) polling (e.g. calls SDI_FREEBLK function, step 213, Fig. 2, and step 315, Fig. 3) the interface object comprises the application (e.g. Target Driver 22, Fig. 1) removing the target-indication from the interface object (e.g. deallocating the SCB) in response to an execution of the data command (e.g. job completed) at the targeted volume (Target Driver 22, Fig. 1 completes the job step 314, Fig. 3. Target Driver 22, Fig. 1 then calls the SDI_FREEBLK function (Figure 10), at step 315, Fig. 3, to deallocate the SCB of the completed job, col. 15, lines 19-21 and 25-27).

19. As to claims 15 and 31, Clarey teaches the method according to claim 7 and the apparatus according to claim 23, wherein the host and the logical volumes operate according to a Small Computer System Interface (SCSI) protocol (SCSI Driver Interface 24, Fig. 1, is a standard communication interface provided by the Host Adapter driver program 23, Fig. 1, col. 6, lines 63-64 and col. 7, lines 3-4, Target Drivers 22, Fig. 1 communicate with Targets 13, Fig. 1 indirectly, through Host Adapter Driver 23, Fig. 1 and Host Adapter 10, Fig. 1).

Claim Rejections - 35 USC § 103

20. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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21. Claims 16 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 4,975,829 to Clarey et al. (hereinafter Clarey) in view of United States Patent 6,343,324 B1 to Hubis et al. (hereinafter Hubis).

22. As to claims 16 and 32, Clarey does not teach the method according to claim 15 and the apparatus according to claim 31, wherein the data command comprises a SCSI command, the method and apparatus further comprising:

- incorporating the target-indication in the SCSI command so as to generate a modified SCSI command;

- conveying the modified SCSI command from the host to a target device;

- receiving the modified SCSI command at the target and recovering the address from the modified SCSI; and

- executing the SCSI command at the targeted logical volume in response to the recovered address.

However Hubis teaches the method according to claim 15 and the apparatus according to claim 31, wherein the data command comprises a SCSI command, the method and apparatus further comprising:

- incorporating (e.g. stored in command) the target-indication (Logical Volume Number, bytes 3 and 4, Read LUN Map Vendor Unique Direct Command, Table 1, col. 18, lines 36-52, specifies the device number of the logical Volume whose information is to be reported (e.g. read), col. 18, lines 60-61) in the SCSI command so as to generate a modified SCSI command (Direct Command is a SCSI Vendor Unique Command, col. 18, line 17);

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conveying (e.g. sending command) the modified SCSI command from the host (101-1, 101-2, 101-3, Fig. 1) to a target device (Array Controller 104, Fig. 1) (Vendor Unique Direct Commands are Host-to-Volume Mapping Direct Commands allows commands to be sent and received by array controller, col. 18, lines 18-19, e.g. a request made by a host for a logical volume, col. 18, lines 2-3, sent from Host 101-1 to Array Controller, 104, Fig. 1);

receiving the modified SCSI command at the target device (receipt of a host access request (e.g. read or write, or Vendor Unique command), col. 15, lines 11-13) and recovering the address from the modified SCSI command (once command received controller determines type of command, step 302, Fig. 3A, for a Read or Write command controller determines LUN and corresponding logical volume to which command is addressed, step 319, Fig. 3b, col. 15, lines 14-24); and

executing (e.g. process command) the SCSI command at the targeted logical volume in response to the recovered address (access to logical volume permitted, process command normally, step 325, Fig. 3B).

As to claim 32, Hubis teaches a processor (180, Fig. 2A).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have modified the data structure of Clarey with the teachings of a modified SCSI command from Hubis because this feature would have provided a mechanism for a host computer to create or change Host-to-Volume Mapping information used by the controller (col. 19, lines 10-13 of Hubis), which restricts access

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to any particular configured Logical Volumes only to a single host or group of hosts (col. 5, lines 12-15 of Hubis).

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

United States Patent 5,307,491 to Feriozi et al. discloses a tiered device driver system includes a SCSI generic device driver (SGDD) in one tier and one or more SCSI device-class drivers (SDCD) in another tier.

United States Patent 6,470,382 B1 to Wang et al. discloses a method to dynamically attach, manage, and access a LAN-attached SCSI and netSCSI device to a network.

United States Patent 6,591,310 B1 to Johnson discloses a reply descriptor for transmission over an I/O message passing medium in response to a corresponding request message, the descriptor comprises at least one indication field that can function as a 'flag' to identify its type, and a content field; whereby a reply message is generated only if at least one predefined condition is not met and the content field will, accordingly, comprise information of that reply message's storage location.

United States Patent Application Publication 2003/00849209 A1 to Chadalapaka discloses a system and method for virtualizing storage in a networked system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kacy Verdi whose telephone number is (571) 270-1654. The examiner can normally be reached on Monday-Friday 7:30am-5:00pm EST..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Thomson can be reached on (571) 272-3718. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call (800) 786-9199 (IN USA OR CANADA) or (571) 272-1000.

May 23, 2007
KV


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